

Claims

- 5 1. Electric motor, in particular for raising and lowering panes in a motor vehicle, with a transmission (11) and a transmission housing (10) and control electronics located in the transmission housing (10) characterized in that the control electronics comprises a, and in particular at least one, printed circuit board (14) which is essentially rectangular and located in the transmission housing (10).
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2. Electric motor according to Claim 1, characterized in that the electric motor has a pole housing (12) and a commutator (16) and that the commutator (16) extends out over the pole housing (12).
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3. Electric motor according to the preceding claims, characterized in that a brush holder (18) is provided which has a groove (14) or a positive stop (27a) for receiving the printed circuit board (14).
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4. Electric motor according to the preceding claims, characterized in that the suppression elements (34) are provided and that they are located directly on the printed circuit board (14).
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5. Electric motor according to any of the preceding claims, characterized in that the printed circuit board (14) can be provided with at least one ASIC (44) having integrated Hall sensors.
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6. Electric motor according to Claim 3, characterized in that the brush holder has connection bridges (38) which can be used as plug pins.

7. Electric motor according to any of the preceding claims,
characterized in that a pole housing is provided which is joined with
the transmission housing (10) using three screws.

5 8. Electric motor according to any of the preceding claims,
characterized in that the printed circuit board (14) extends at least
over the length of the commutator (16), and in particular extends
beyond the commutator (16) by 1.5 times its length or, preferably, 2
or more times its length.

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9. Electric motor according to any of the preceding claims,
characterized in that the brush holder (14) supports at least one
segment (29) along an armature shaft (15), and that this segment
extends beyond the printed circuit board (14) and at its end forms at
least part of a bearing receptacle (32).

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10. Electric motor according to any of the preceding claims,
characterized in that the brush holder (18) has holding elements
(30) for suppression elements (34).

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11. Electric motor according to any of the preceding claims,
characterized in that the brush holder (18) has a connector plug
(28) which is attached to the printed circuit board (14) using arch or
bridge shaped connection bridges (38).

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12. Electric motor according to any of the preceding claims,
characterized in that the printed circuit board (14) has not conductor
paths in the area of the brush sparking on the commutator (16), in
particular on the side facing the commutator (16).

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13. Electric motor according to any of the preceding claims,
characterized in that at lease one additional fastening device
besides the groove (27) on the brush holder (18) is provided.

5 14. Electric motor according to Claim 13, characterized in that the at
least one additional attachment of the printed circuit board (14) is by
means of the suppression elements (34).

10 15. Electric motor according to Claim 13, characterized in that the
printed circuit board (14) is attached on a segment (29).

15 16. Electric motor according to any of the preceding claims,
characterized in that the essentially rectangular printed circuit board
(14) can be inserted into an opening (50) on the transmission
housing (10).

20 17. Electric motor according to any of the preceding claims,
characterized in that the printed circuit board (14) is connected to
the connection plug (28).

25 18. Electric motor according to Claim 17, characterized in that a flange
connection (52) for connecting the connector plug (28) to the
transmission housing (10) is provided.

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